

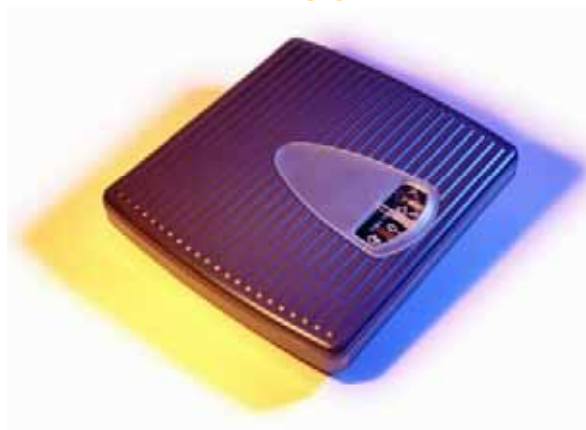
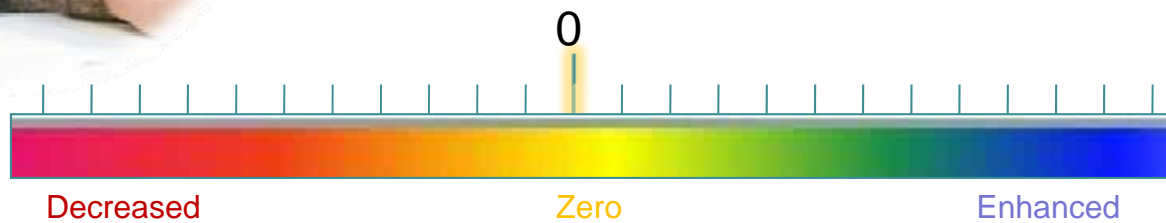


Visible Learning, Tomorrow's Schools, The Mindsets that make the difference in Education

John Hattie
Visible Learning Laboratories
University of Auckland



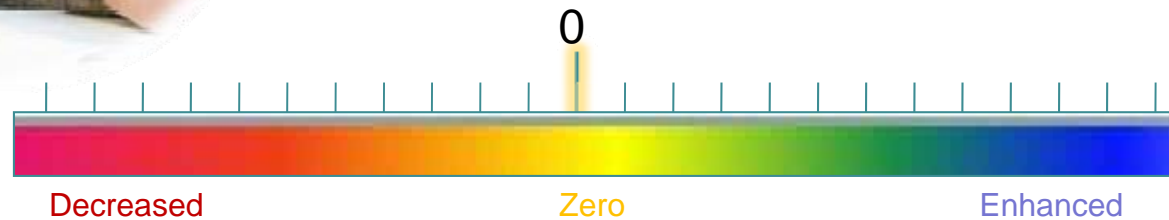
Influences on Achievement ?



Reducing Class Size on Achievement?

What is the effect of reducing class size

Hundreds of evaluations of reducing class size



Effect on Achievement over time?

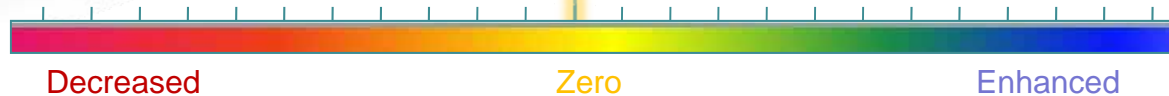


Reducing
Class Size



0 .20

1.0



| An effect-size of | .20 | 1.0 |
|--|--------|-------|
| advancing achievement | 9 mths | 3 yrs |
| % improving rate of learning | 10% | 45% |
| r variable & achievement | .10 | .45 |
| % of students with treatment exceeding those not treated | 8 | 34 |

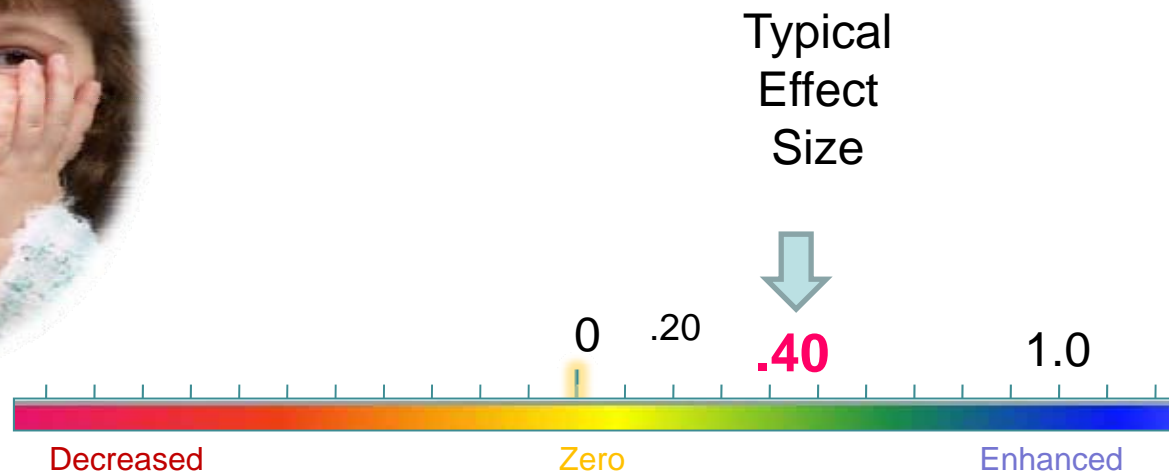


The typical influence on achievement

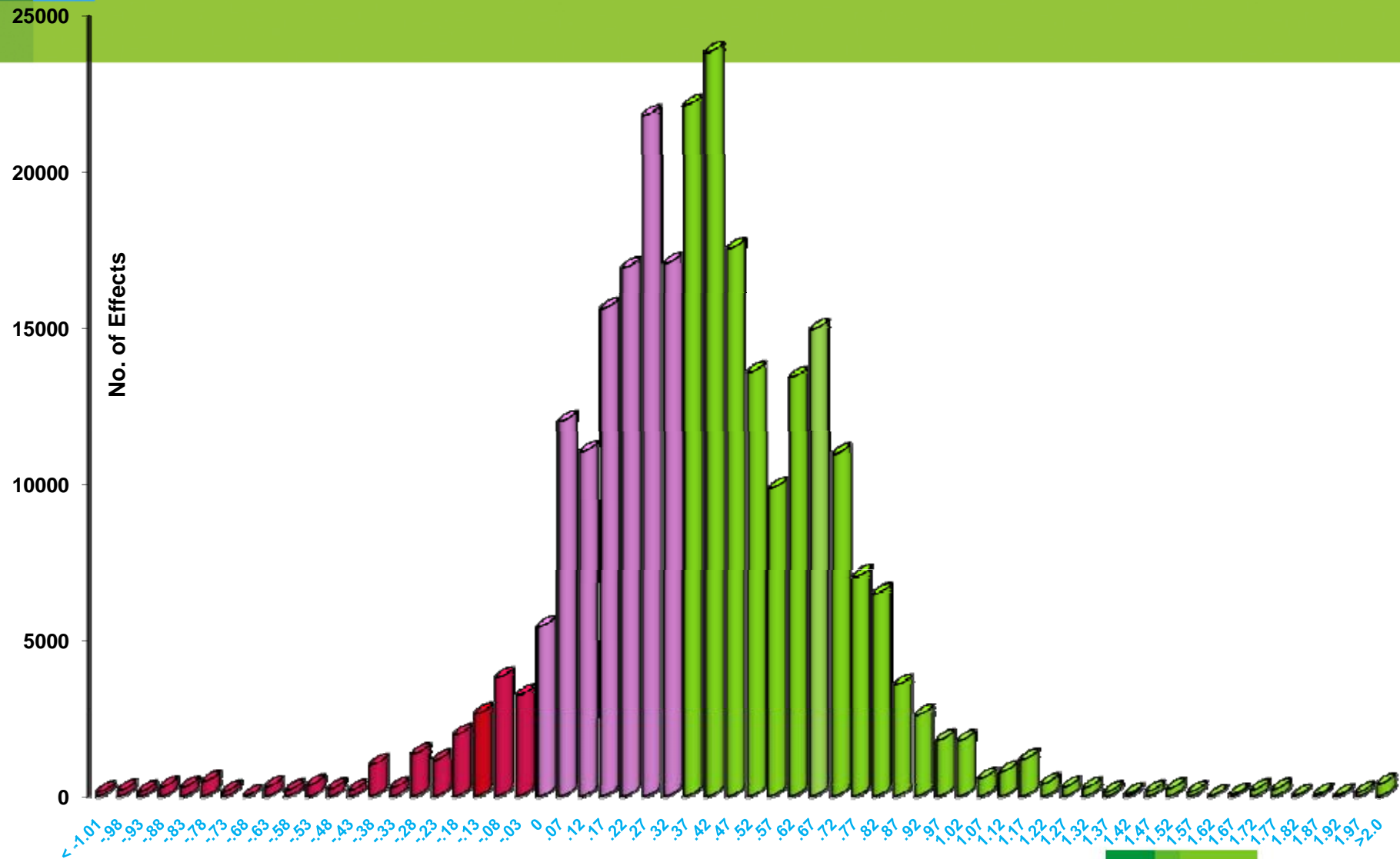
So what is the typical effect across

- **800+ meta-analysis**
- **50,000 studies, and**
- **200+ million students**

Effect on Achievement over time?



Distribution of effects



Rank these 12 effects: Answers

- 1 Acceleration (speed up a year)
- 2 Feedback
- 3 Student-teacher relationships
- 4 Teaching study skills
- 5 Reading Recovery
- 6 Cooperative learning
- 7 Homework
- 8 Individualized instruction
- 9 Ability grouping
- 10 Open vs. traditional classes
- 11 Retention (hold back a year)
- 12 Shifting schools



Rank these 12 effects: Answers

| | | |
|----|--------------------------------|------|
| 1 | Acceleration (speed up a year) | .88 |
| 2 | Feedback | .73 |
| 3 | Student-teacher relationships | .72 |
| 4 | Teaching study skills | .59 |
| 5 | Reading Recovery | .50 |
| 6 | Cooperative learning | .41 |
| 7 | Homework | .29 |
| 8 | Individualized instruction | .22 |
| 9 | Ability grouping | .12 |
| 10 | Open vs. traditional classes | .01 |
| 11 | Retention (hold back a year) | -.16 |
| 12 | Shifting schools | -.34 |



The Disasters ...



| Rank | Influence | Studies | Effects | ES |
|------|-------------------------------|---------|---------|------|
| 130 | College halls of residence | 10 | 23 | .05 |
| 131 | Multi-grade/age classes | 94 | 72 | .04 |
| 132 | Student control over learning | 65 | 38 | .04 |
| 133 | Open vs. Traditional | 315 | 333 | .01 |
| 134 | Summer vacation | 39 | 62 | -.09 |
| 135 | On Welfare Policies | 8 | 8 | -.12 |
| 136 | Retention | 207 | 2675 | -.16 |
| 137 | Television | 37 | 540 | -.18 |
| 138 | Mobility | 181 | 540 | -.34 |

The Disasters ...



| Rank | Influence | Studies | Effects | ES |
|------|-------------------------------------|---------|---------|-----|
| 120 | Mentoring | 74 | 74 | .15 |
| 121 | Teacher education | 85 | 391 | .12 |
| 122 | Ability grouping | 500 | 1369 | .12 |
| 123 | Gender | 2926 | 6051 | .12 |
| 124 | Diet | 23 | 125 | .12 |
| 125 | Teacher subject matter knowledge | 92 | 424 | .09 |
| 126 | Distance Education | 839 | 1643 | .09 |
| 127 | Out of school curricula experiences | 52 | 50 | .09 |
| 128 | Perceptual-Motor programs | 180 | 637 | .08 |
| 129 | Whole language | 64 | 197 | .06 |

The Disasters ...



| Rank | Influence | Studies | Effects | ES |
|------|-----------------------------|---------|---------|-----|
| 110 | Learning hierarchies | 24 | 24 | .19 |
| 111 | Co- Team teaching | 136 | 47 | .19 |
| 112 | Web based learning | 45.3 | 136 | .18 |
| 113 | Family structure | 845 | 1733 | .17 |
| 114 | Extra-curricula Programs | 102 | 68 | .17 |
| 115 | Teacher Immediacy | 16 | 16 | .16 |
| 116 | Within class grouping | 129 | 181 | .16 |
| 116 | Home-school programs | 14 | 14 | .16 |
| 118 | Problem based learning | 285 | 546 | .15 |
| 119 | Sentence Combining programs | 35 | 40 | .15 |

Not Worth it yet ...



| Rank | Influence | Studies | Effects | ES |
|------|---------------------------------|---------|---------|-----|
| 100 | Finances | 189 | 681 | .23 |
| 101 | Illness (Lack of) | 13 | 13 | .23 |
| 101 | Religious Schools | 71 | 71 | .23 |
| 103 | Individualized instruction | 638 | 1185 | .22 |
| 104 | Visual/Audio-visual methods | 359 | 231 | .22 |
| 105 | Comprehensive Teaching Reforms | 282 | 1818 | .22 |
| 106 | Class size | 96 | 785 | .21 |
| 107 | Charter Schools | 18 | 18 | .20 |
| 108 | Aptitude/treatment interactions | 61 | 340 | .19 |
| 109 | Personality | 234 | 1481 | .19 |

Typical “average teacher” territory ...



| Rank | Influence | Studies | Effects | ES |
|------|--|---------|---------|-----|
| 90 | Exercise/Relaxation programs | 227 | 1971 | .28 |
| 91 | Desegregation | 335 | 723 | .28 |
| 92 | Mainstreaming | 150 | 370 | .28 |
| 93 | Teaching test taking & coaching | 275 | 372 | .27 |
| 94 | Use of calculators | 222 | 1083 | .27 |
| 95 | Values/Moral Education Programs | 84 | 97 | .24 |
| 96 | Competitive vs. individualistic learning | 831 | 203 | .24 |
| 96 | Special College Programs | 108 | 108 | .24 |
| 98 | Programmed instruction | 493 | 391 | .23 |
| 99 | Summer school | 105 | 600 | .23 |

Typical “average teacher” territory ...



| Rank | Influence | Studies | Effects | ES |
|------|--------------------------------------|---------|---------|-----|
| 80 | Decreasing disruptive behavior | 165 | 416 | .34 |
| 81 | Drugs | 467 | 1839 | .33 |
| 82 | Simulations | 361 | 482 | .33 |
| 83 | Inductive teaching | 97 | 103 | .33 |
| 84 | Ethnicity | 9 | 9 | .32 |
| 85 | Teacher effects | 18 | 18 | .32 |
| 86 | Inquiry based teaching | 205 | 420 | .31 |
| 87 | Ability grouping for gifted students | 125 | 202 | .30 |
| 88 | Homework | 161 | 295 | .29 |
| 89 | Home visiting | 71 | 52 | .29 |

Closer to Average ...



| Rank | Influence | Studies | Effects | ES |
|------|---------------------------------|---------|---------|-----|
| 70 | Time on Task | 100 | 136 | .38 |
| 71 | Computer assisted instruction | 4899 | 8914 | .37 |
| 72 | Adjunct aids | 73 | 258 | .37 |
| 73 | Bilingual Programs | 128 | 727 | .37 |
| 74 | Principals/ School leaders | 491 | 1257 | .36 |
| 75 | Attitude to Mathematics/Science | 288 | 664 | .36 |
| 76 | Exposure to Reading | 114 | 293 | .36 |
| 77 | Drama/Arts Programs | 715 | 728 | .35 |
| 78 | Creativity | 21 | 447 | .35 |
| 79 | Frequent/ Effects of testing | 569 | 1749 | .34 |

Average



| Rank | Influence | Studies | Effects | ES |
|------|---|---------|---------|-----|
| 60 | Mathematics programs | 706 | 2404 | .43 |
| 61 | Behavioral organizers/Adjunct questions | 577 | 1933 | .41 |
| 63 | Cooperative learning | 306 | 829 | .41 |
| 64 | Science | 884 | 2592 | .40 |
| 65 | Social skills programs | 540 | 2278 | .40 |
| 66 | Reducing anxiety | 121 | 1097 | .40 |
| 67 | Integrated Curricula Programs | 61 | 80 | .39 |
| 68 | Enrichment | 214 | 543 | .39 |
| 69 | Career Interventions | 143 | 243 | .38 |

Average



| Rank | Influence | Studies | Effects | ES |
|------|---------------------|---------|---------|-----|
| 51 | Motivation | 327 | 979 | .48 |
| 52 | Early Intervention | 1704 | 9369 | .47 |
| 53 | Questioning | 211 | 271 | .46 |
| 54 | Pre school programs | 358 | 1822 | .45 |
| 55 | Quality of Teaching | 141 | 195 | .44 |
| 56 | Writing Programs | 262 | 341 | .44 |
| 57 | Expectations | 674 | 784 | .43 |
| 58 | School size | 21 | 120 | .43 |
| 59 | Self-concept | 324 | 2113 | .43 |

Let's have them



| Rank | Influence | Studies | Effects | ES |
|------|--|---------|---------|-----|
| 40 | Keller's PIS | 263 | 162 | .53 |
| 41 | Peer influences | 12 | 122 | .53 |
| 42 | Classroom management | 100 | 5 | .52 |
| 43 | Outdoor/ Adventure Programs | 187 | 429 | .52 |
| 44 | Interactive video methods | 441 | 3930 | .52 |
| 45 | Parental Involvement | 716 | 1783 | .51 |
| 46 | Play Programs | 70 | 70 | .50 |
| 47 | Second/Third chance programs | 52 | 1395 | .50 |
| 48 | Small group learning | 78 | 155 | .49 |
| 49 | Concentration/Persistence/ Engagement | 146 | 587 | .48 |

Exciting



| Rank | Influence | Studies | Effects | ES |
|------|--------------------------------------|---------|---------|-----|
| 30 | Worked examples | 62 | 151 | .57 |
| 31 | Home environment | 35 | 109 | .57 |
| 32 | Socioeconomic status | 499 | 957 | .57 |
| 33 | Concept mapping | 287 | 332 | .57 |
| 34 | Challenging Goals | 604 | 820 | .56 |
| 35 | Visual-Perception programs | 683 | 5035 | .55 |
| 36 | Peer tutoring | 767 | 1200 | .55 |
| 37 | Cooperative vs. competitive learning | 1024 | 933 | .54 |
| 38 | Pre-term birth weight | 46 | 136 | .54 |
| 39 | Classroom cohesion | 88 | 841 | .53 |

Among the Winners ...



| Rank | Influence | Studies | Effects | ES |
|------|--|---------|---------|-----|
| 20 | Problem solving teaching | 221 | 719 | .61 |
| 21 | Not labeling students | 79 | 79 | .61 |
| 22 | Teaching strategies | 5667 | 13572 | .60 |
| 23 | Cooperative vs. individualistic learning | 774 | 284 | .59 |
| 24 | Study skills | 668 | 2217 | .59 |
| 25 | Direct Instruction | 304 | 597 | .59 |
| 26 | Tactile stimulation programs | 19 | 103 | .58 |
| 27 | Phonics instruction | 447 | 5990 | .58 |
| 28 | Comprehension programs | 415 | 2653 | .58 |
| 29 | Mastery learning | 377 | 296 | .58 |

The Winners ...



| Rank | Influence | Studies | Effects | ES |
|------|---------------------------------------|---------|---------|-----|
| 11 | Teacher-Student relationships | 229 | 1450 | .72 |
| 12 | Spaced vs. Mass Practice | 63 | 112 | .71 |
| 13 | Meta-cognitive strategies | 63 | 143 | .69 |
| 14 | Prior achievement | 3607 | 9209 | .67 |
| 15 | Vocabulary programs | 301 | 800 | .67 |
| 16 | Repeated Reading programs | 54 | 156 | .67 |
| 17 | Creativity Programs | 685 | 837 | .65 |
| 18 | Self-verbalization & Self-questioning | 113 | 1150 | .64 |
| 19 | Professional development | 537 | 1884 | .62 |

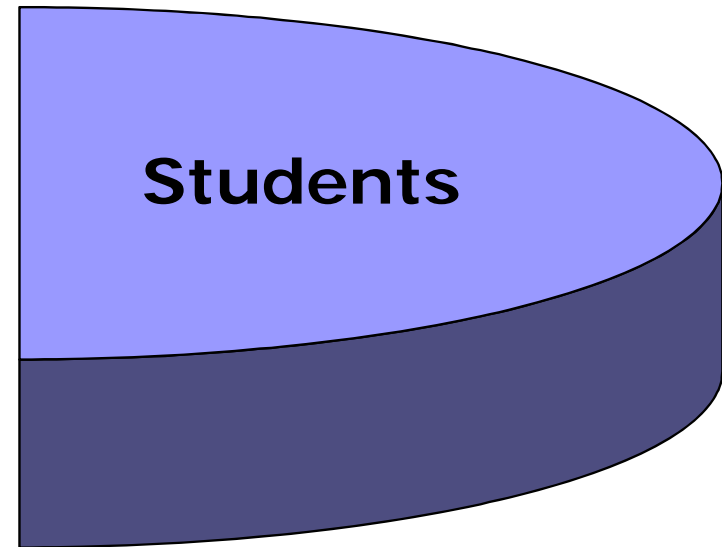
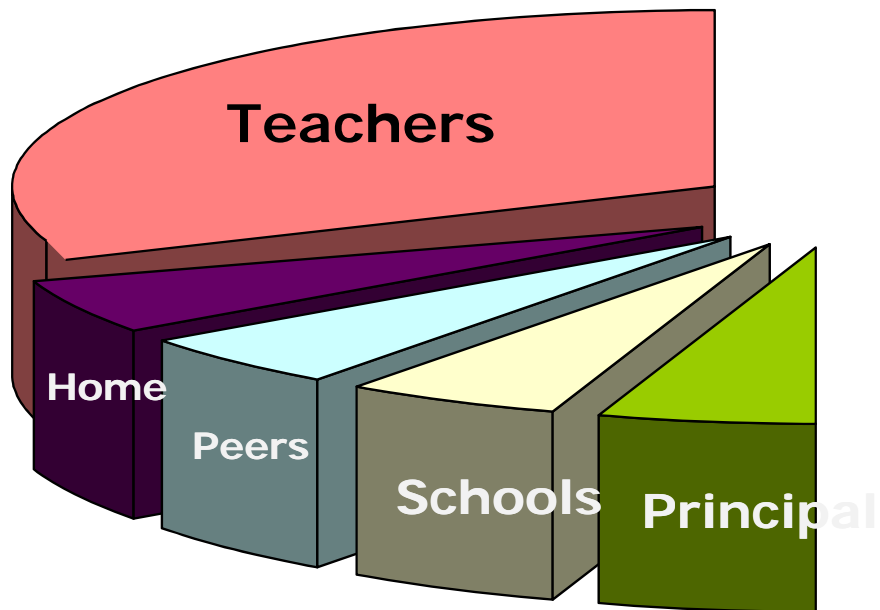
The Winners ...



| Rank | Influence | Studies | Effects | ES |
|------|--|---------|---------|------|
| 1 | Self-reported grades | 209 | 305 | 1.44 |
| 2 | Piagetian programs | 51 | 65 | 1.28 |
| 3 | Providing formative evaluation | 30 | 78 | .90 |
| 4 | Micro teaching | 402 | 439 | .88 |
| 5 | Acceleration | 37 | 24 | .88 |
| 6 | Classroom behavioral | 160 | 942 | .80 |
| 7 | Comprehensive interventions for learning disabled students | 343 | 2654 | .77 |
| 8 | Teacher clarity | na | na | .75 |
| 9 | Reciprocal teaching | 38 | 53 | .74 |
| 10 | Feedback | 1287 | 2050 | .73 |

Identifying what matters

Percentage of Achievement Variance



Visible Teaching – Visible Learning

When teachers SEE learning through the eyes of the student
and

When students SEE themselves as their own teachers



MINDSETS – 1. Teachers/ Leaders as Evaluators

A disposition to asking ...

- How do I know this is working?
- How can I compare 'this' with 'that'?
- What is the merit and worth of this influence on learning?
- What is the magnitude of the effect?
- What evidence would convince you that you are wrong?
- Where is the evidence that shows this is superior to other programs?
- Where have you seen this practice installed so that it produces effective results?
- Do I share a common conception of progress?

The use of Effect-sizes

$$\text{Effect-size} = \frac{\text{Average}_{\text{post}} - \text{Average}_{\text{pre}}}{\text{spread (sd)}}$$

or

$$\text{Effect-size} = \frac{\text{Average}_{\text{class1}} - \text{Average}_{\text{class 2}}}{\text{spread (sd)}}$$

2. It's about the teacher's/leaders mindset, not the kids!



Don't blame the kids

Social class/ prior achievement is surmountable

All students can be challenged

Strategies not styles

Develop high student expectations

Enhance help seeking

Develop assessment capable students

The power of developing peer interactions

The power of critique/error/feedback

Self-regulations and seeing students as teachers



3. Teachers/Leaders as change agents

Achievement is changeable and enhanceable vs. immutable and fixed

Teaching as an enabler not a barrier

Engage in the total learning and
not break into steps and chunks

The Power of learning intentions

The Power of success criteria



The Contrasts

- An active teacher, passionate for their subject and for learning, a change agent

OR

- A facilitative, inquiry or discovery based provider of engaging activities



Activator or Facilitator ?



An Activator

Reciprocal teaching

Feedback

Teaching students self-verbalization

Meta-cognition strategies

Direct Instruction

Mastery learning

Goals - challenging

Frequent/ Effects of testing

Behavioral organizers

A Facilitator

Simulations and gaming

Inquiry based teaching

Smaller class sizes

Individualized instruction

Problem-based learning

Different teaching for boys & girls

Web-based learning

Whole Language Reading

Inductive teaching

Activator or Facilitator ?

An Activator

ES

| | |
|--------------------------------------|-----|
| Reciprocal teaching | .74 |
| Feedback | .72 |
| Teaching students self-verbalization | .67 |
| Meta-cognition strategies | .67 |
| Direct Instruction | .59 |
| Mastery learning | .57 |
| Goals - challenging | .56 |
| Frequent/ Effects of testing | .46 |
| Behavioral organizers | .41 |

ACTIVATOR

.60

A Facilitator

ES

| | |
|-------------------------------------|-----|
| Simulations and gaming | .32 |
| Inquiry based teaching | .31 |
| Smaller class sizes | .21 |
| Individualized instruction | .20 |
| Problem-based learning | .15 |
| Different teaching for boys & girls | .12 |
| Web-based learning | .09 |
| Whole Language Reading | .06 |
| Inductive teaching | .06 |

FACILITATOR

.17

4. Teachers/Leaders gaining feedback about themselves ...

- Where am I going?
- How am I going?
- Where to next?




5. Assessment as feedback – to teachers/leaders

- Who did you teach well, who not so well
- What did you teach well, not so well
- Where are the gaps, strengths, achieved, to be achieved
- Levels and Progress
- Developing a common conception of progress

School profiles

Interaction Effects

Ethnicity: All
Year: 4, 5, 6, 7, 8
Gender: All

Language: All
Cluster: All Clusters
NZ Performance: 

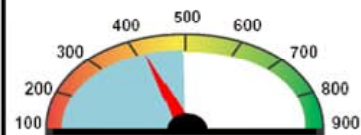
Location: All NZ Schools

Your Group Performance: 

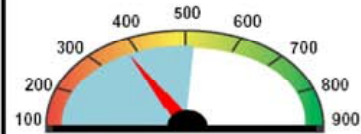
No. of Students: 195

No. of Results: [n]

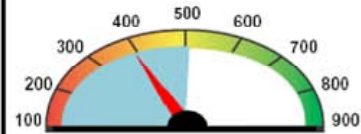
Curriculum Functions



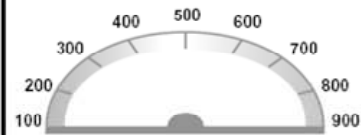
Number Knowledge [195]



Number Operations [195]

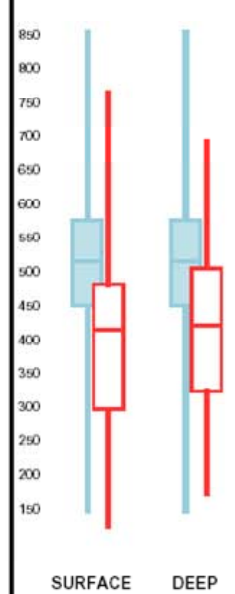


Algebra [195]

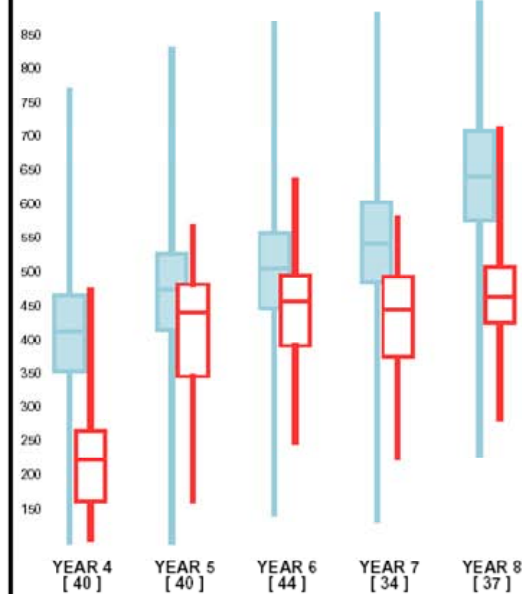


Measurement [0]

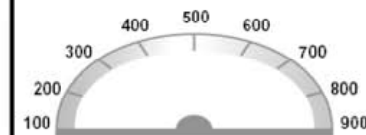
Depth of Thinking



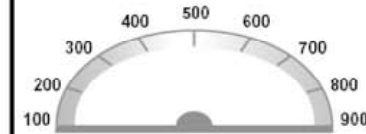
Mathematics Scale



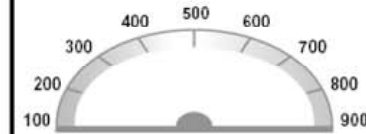
Curriculum Functions



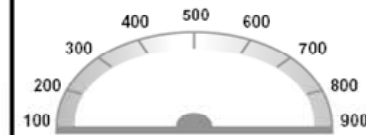
Geometric Knowledge [0]



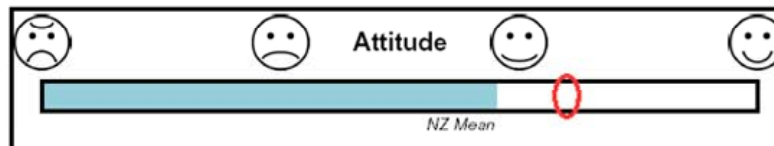
Geometric Operations [0]



Probability [0]



Statistics [0]



Individual Learning Pathways

Learning Pathways Report for Test: Reading U, C, SF

Group: All Test Candidates

Date Tested: 22 October 2003

Student: Davis Crispness

Correct

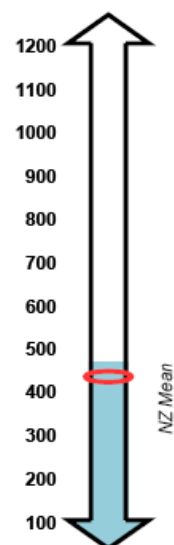
Strengths

- Make inferences: (15, 22, 33)
- Knowledge of vocabulary: (11, 20, 24, 28, 33)
- Respond using understandings & information: (11, 25)
- Skim/scan for information: (19, 25)
- Find, select, & retrieve information: (19, 25)
- Punctuation: (15, 24)
- Make links between aspects of text: (15)
- Make use of prior knowledge: (20)
- Identification and understanding of main ideas: (20)

Achieved

- Respond using understandings & information: (2, 6, 13, 21)
- Skim/scan for information: (2, 21)
- Find, select, & retrieve information: (2, 21)
- Knowledge of vocabulary: (6)
- Knowledge of semantic, syntactic, & visual grapho-phonic cues: (6)
- Identification and understanding of main ideas: (13)
- Understand & organise or sequence material: (2)

aRs Score



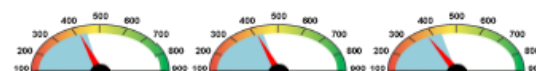
Incorrect

To Be Achieved

- Make links between verbal & visual information: (4, 5, 18)
- Respond using understandings & information: (10, 18, 23, 26, 29)
- Knowledge of poetic & figurative language: (10)
- Knowledge of vocabulary: (5, 7, 10, 31)
- Use grammatically correct structures: (7)
- Knowledge of semantic, syntactic, & visual grapho-phonic cues: (7)
- Make use of prior knowledge: (26)
- Knowledge of publishing/text conventions (e.g., Index, Contents): (26)
- Make links between aspects of text: (27, 29, 32)

Gaps

- Respond using understandings & information: (1, 8, 9, 12, 16)
- Identification and understanding of main ideas: (1)
- Find, select, & retrieve information: (1, 3, 16, 17)
- Use grammatically correct structures: (8, 9)
- Knowledge of semantic, syntactic, & visual grapho-phonic cues: (8)
- Knowledge of vocabulary: (8, 9)
- Understand & organise or sequence material: (3)
- Make inferences: (12)
- Make links between verbal & visual information: (12)

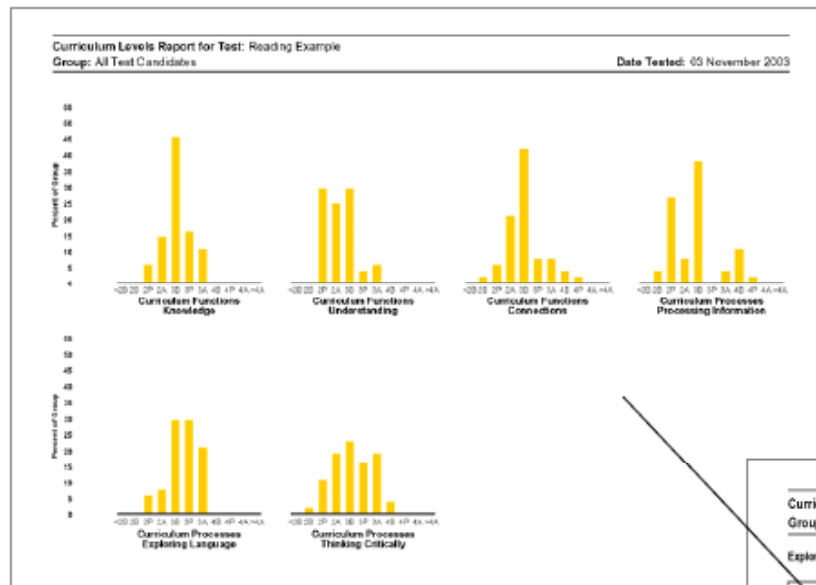


| aRs | Surface | Deep | Understanding | Connections | Grammar |
|--------------|---------|------|---------------|-------------|---------|
| This student | 430 | 466 | 408 | 419 | 414 |
| Level | 2P | 2A | 2P | 2P | 2P |
| Year 5 mean | 462 | 464 | 446 | 448 | 438 |

Curriculum Level Report

e-asTTle

Curriculum Levels Report



This report is designed to answer the question “Where are students relative to the targets of Curriculum Levels 2 to 6”?

This report enables teachers to monitor the effect of teaching and learning activities on student progress within levels.

Curriculum Levels Report for Test: Reading Example
Group: All Test Candidates
Date Tested: 03 November 2003

Exploring Language (Click to Return to Graphs)

| <2 | 2 | 3 | 4 |
|---|--|--|--|
| | | Ross Friesen Eltona Klee Dariusz Luggings | Ben Mitchell Geoff Mearns Nicola Rae Catherine Tuckwell |
| Hannah August Chen-yang Chen Dye Dean Terry East Doris Crispwell Percy Galt Karin Loner Fred Cox Stella Polak Kui Hui Robert Spence Bill Trueman Celine Vidler Sue Mui | Giggle Capper Tina Smith Adrian Fyfe Mueland Hodge Doris Crispwell Natalie Jones Scotty Cunningham Brenda Lene Jessica Taylor Clara Mearns Victoria Piller Libby Piller Rosanna Smith Della Trueman | Nickie Galt Helen Fyfe Angela Galt Molly Goldsmith Brenda Mearns Timothy Mearns Murray Mearns Glen Mearns Helen Mearns Helen Mearns | |
| 4 | 5 | 6 | 7 |
| | | | |

Target Setting/ Expectations

[A asTTle-SMS Integration](#) > [B Student Details](#) > [C Group Details](#) > [D Target Setting](#)

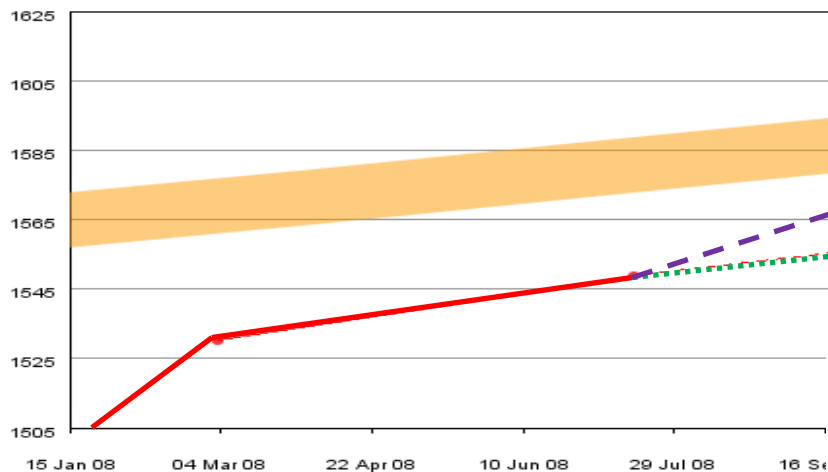
Target Setting: Set Targets for December 2008

Reading

The target has been saved

Targets for Reethu Xavier (Year 7)

Reethu Xavier



● Student Data Curriculum Expected ☒ NZ Performance

| Type | Date | Score | Level | |
|-----------|------------|-------|-------|------------------------|
| Projected | 06/12/2008 | 1560 | 3A | Delete |
| Actual | 16/07/2008 | 1550 | 3A | |
| Actual | 04/03/2008 | 1530 | 3P | |

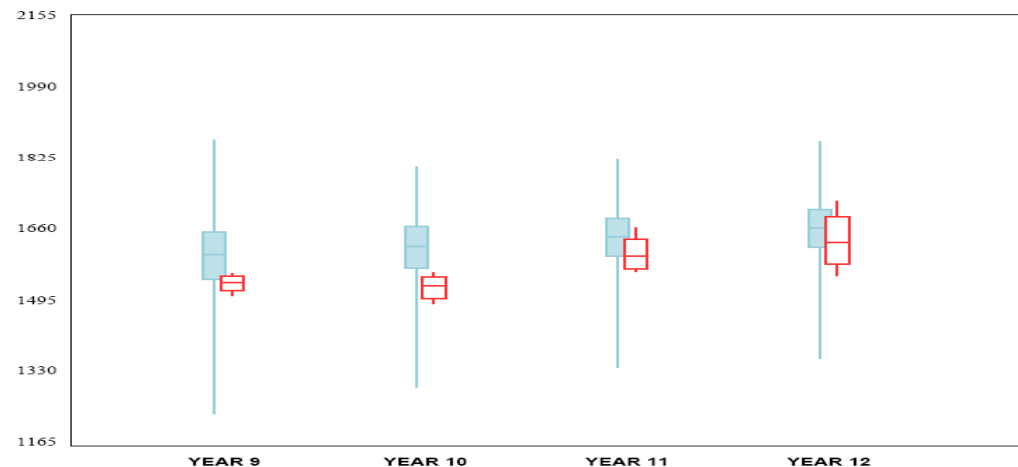
< Go Back

Save Target

Next Student

Target Summary for Subject : Reading
Group : Targets Group
Group Size : 19

Period : 01 March 2008 - 31 March 2008



6. Challenge or “Do your best”



Maintain the challenge not break it down

Power of learning intentions

Power of success criteria

7. It's about “not knowing”/error Relationships in classrooms



**The importance of error
and not knowing ...**

Build trust and rapport

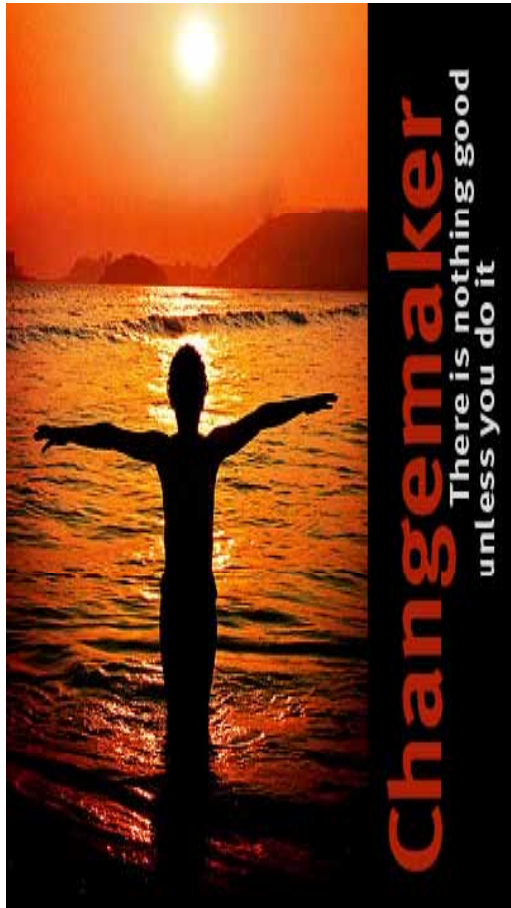
Student more than teacher questioning

Teacher clarity, support, and What's next

Peer teaching, assessment, learning

It's more about the learning than the teaching

MINDSETS – 1. Teachers as Evaluators



Teachers being responsible; don't blame the kids

Teachers as Change Agents more than facilitators

Teachers gaining feedback about their effectiveness & progress

Teachers need to challenge, more than “do your best”

Teachers who welcome error, and build trust

among peers

in classrooms

Teachers who see assessment as informing them more than kids

Teachers as Evaluators (of themselves more than of students)

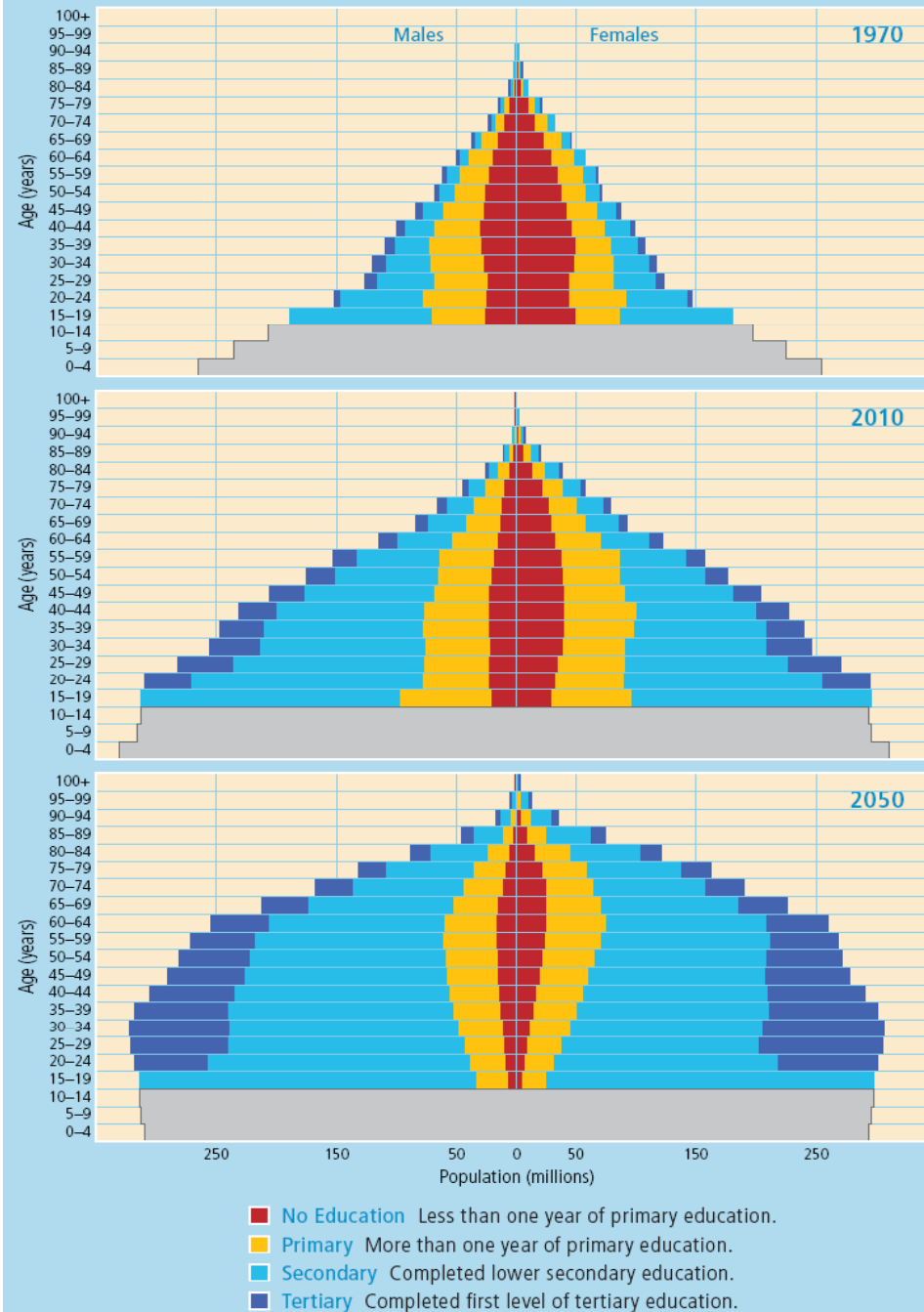


FIGURE 1 The world's growing human capital: World population by age, sex, and educational attainment in 1970 (top) and in Global Education Trend (GET) Scenarios for 2010 (middle) and 2050 (bottom).

While more income leads to higher individual gains, the evidence it leads to higher economic growth at aggregate level.

When age is factored in, it can be seen what the longer term implications of "more schooling"

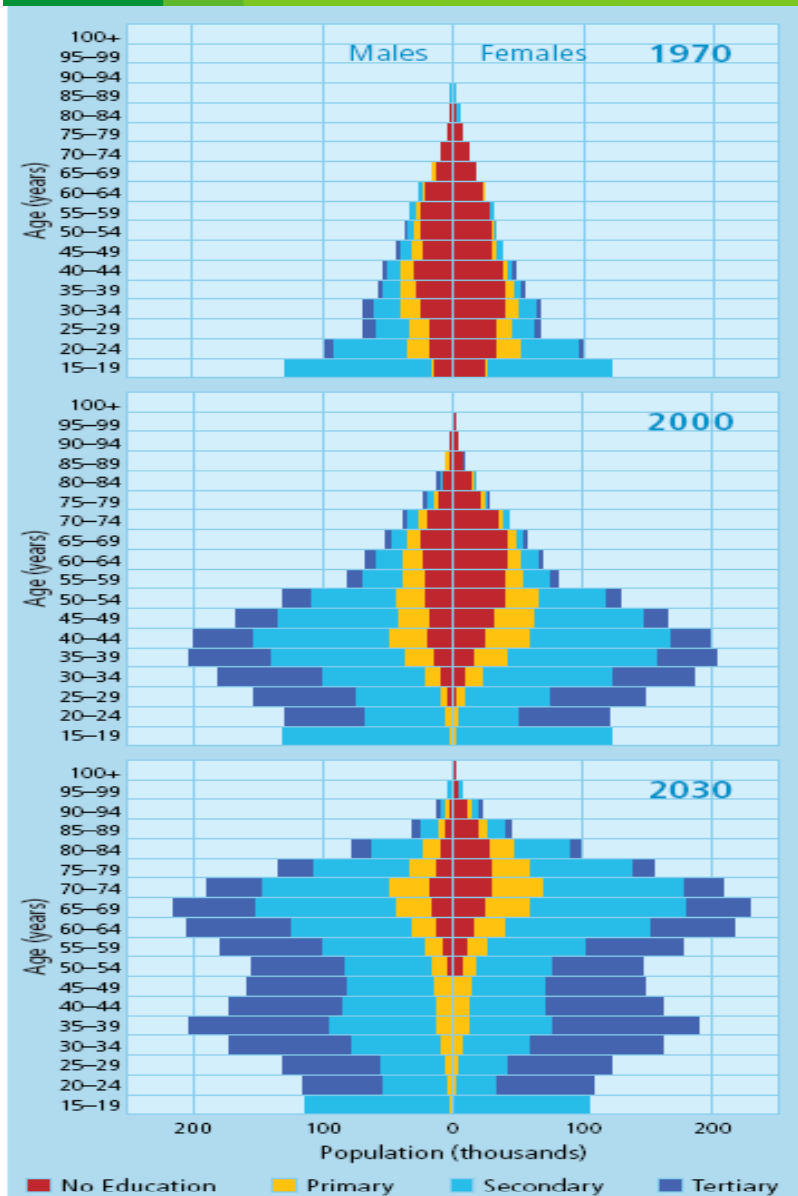
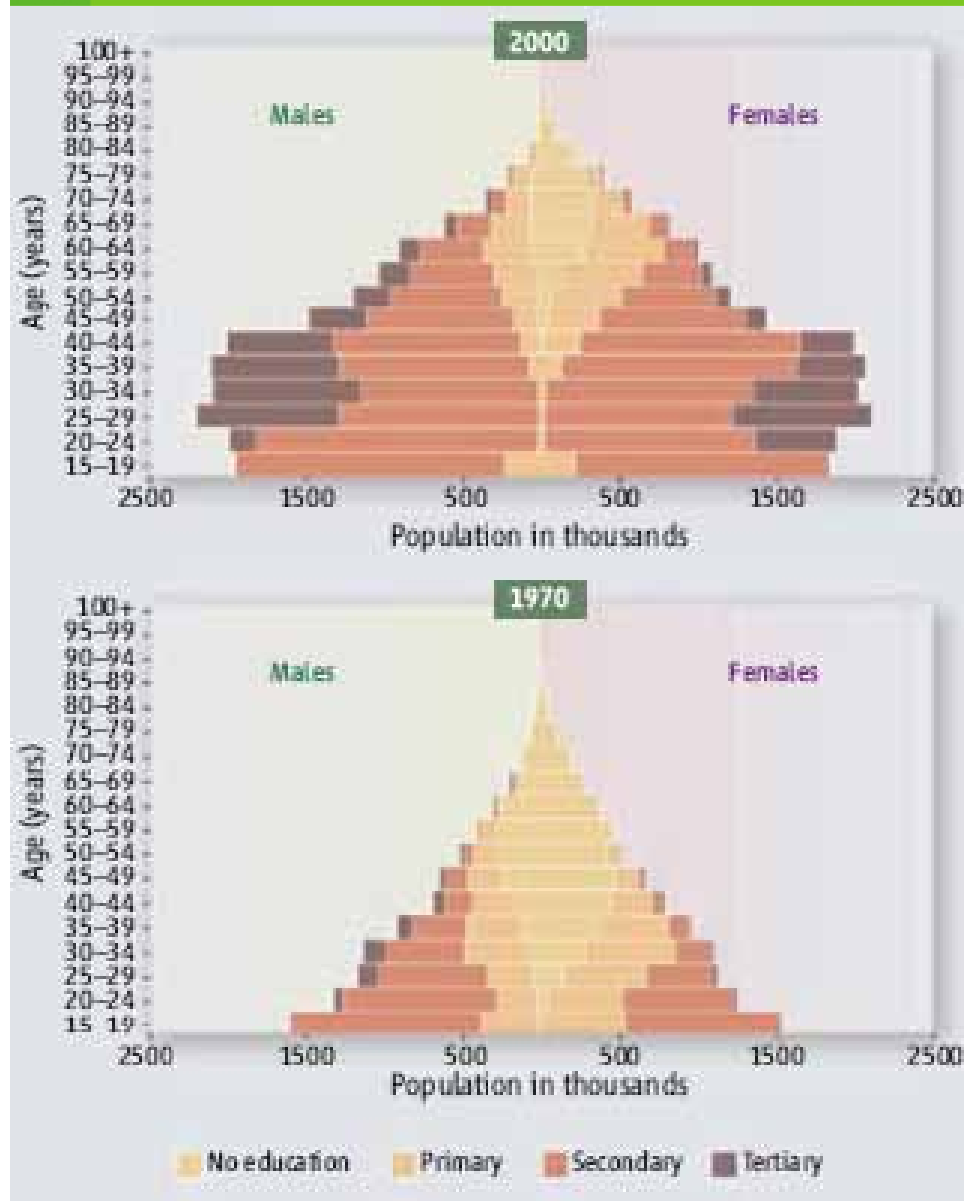


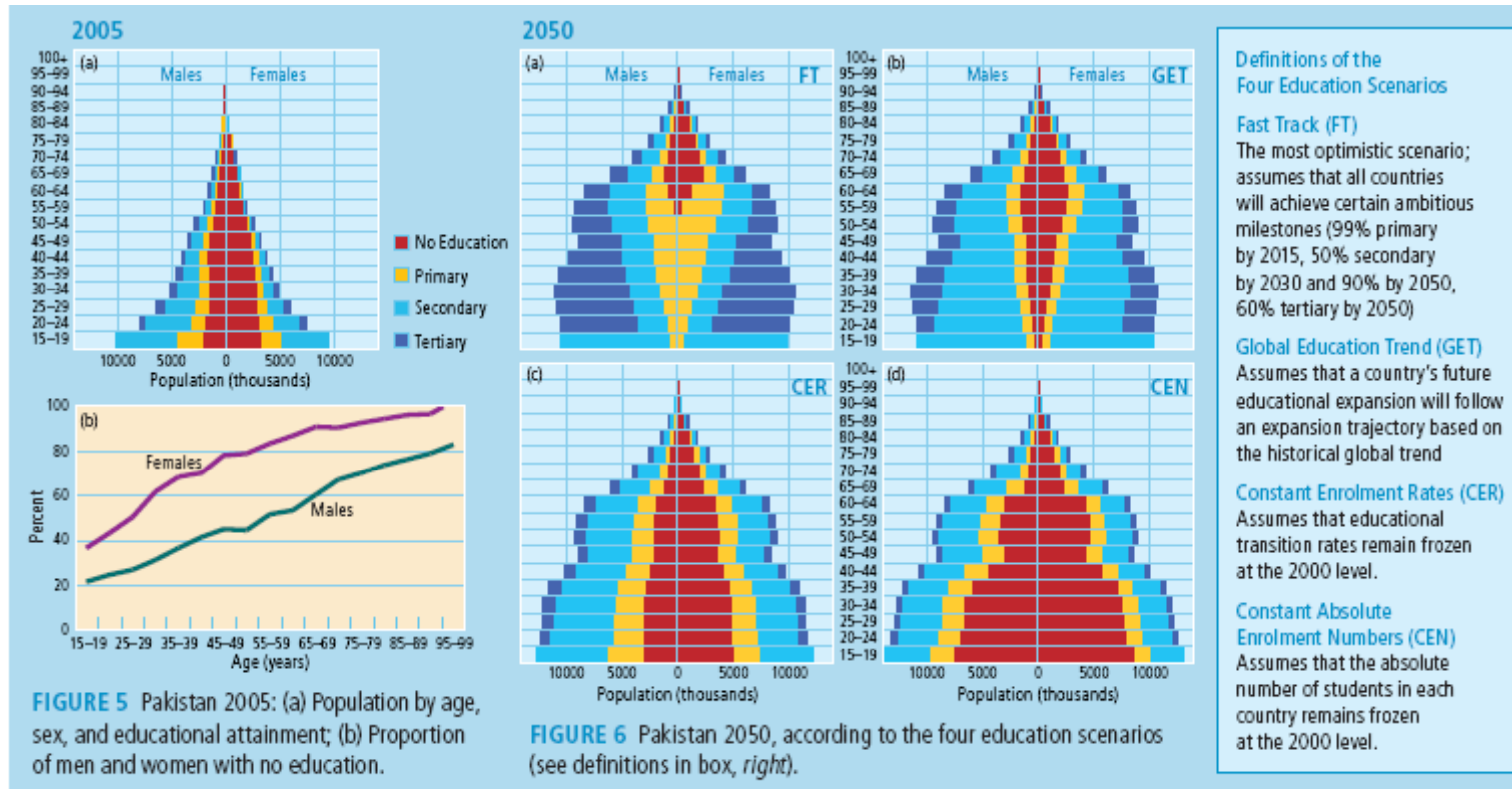
FIGURE 2 Singapore: Population by age, sex, and educational attainment in 1970 (*top*), in 2000 (*middle*), and in 2030 according to the Global Education Trend (GET) Scenario (*bottom*).

Singapore

South Korea



Pakistan under four models



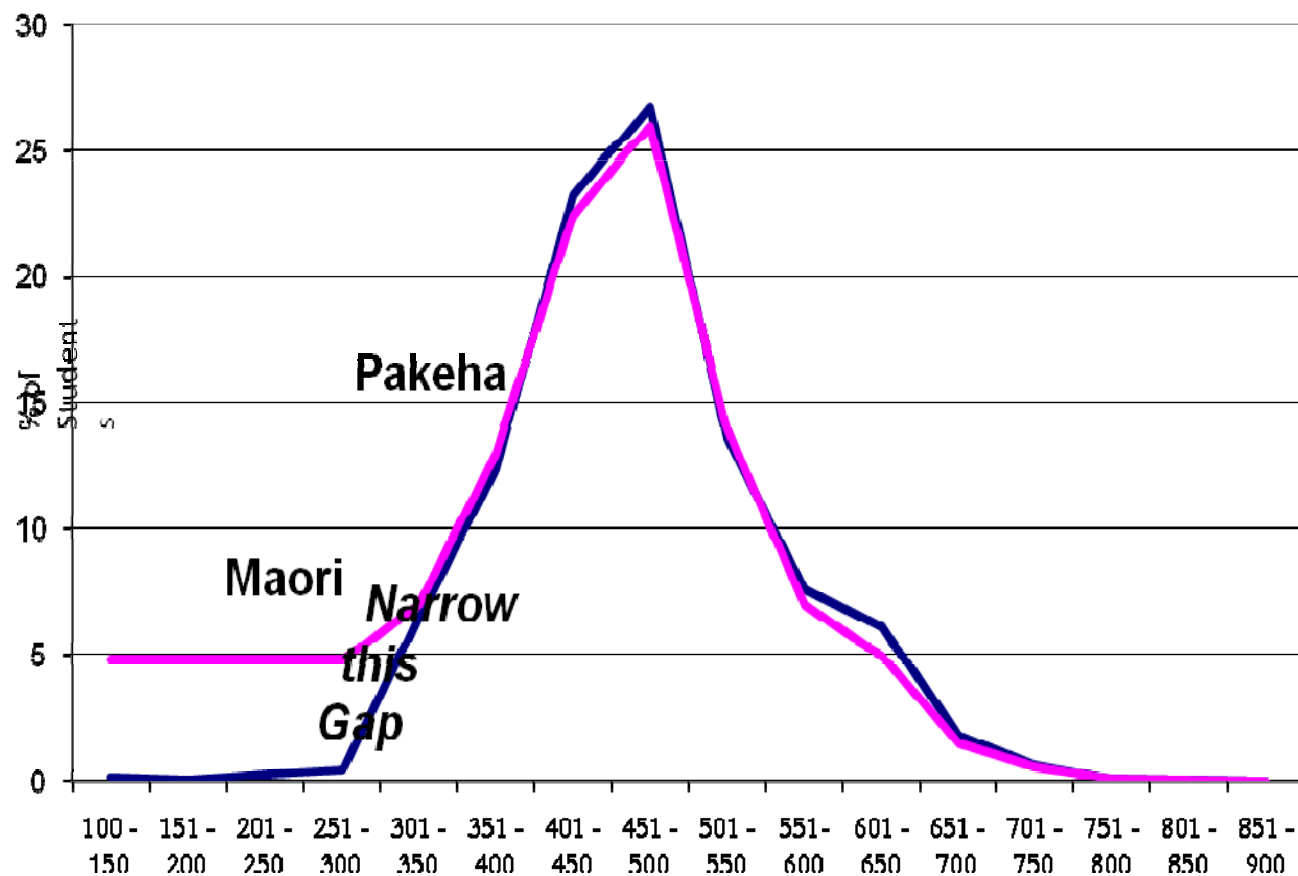
Fast Track – 99% primary (2015), 50% secondary (2030), 60% tertiary (2050)

Global education trend – on historical trend data

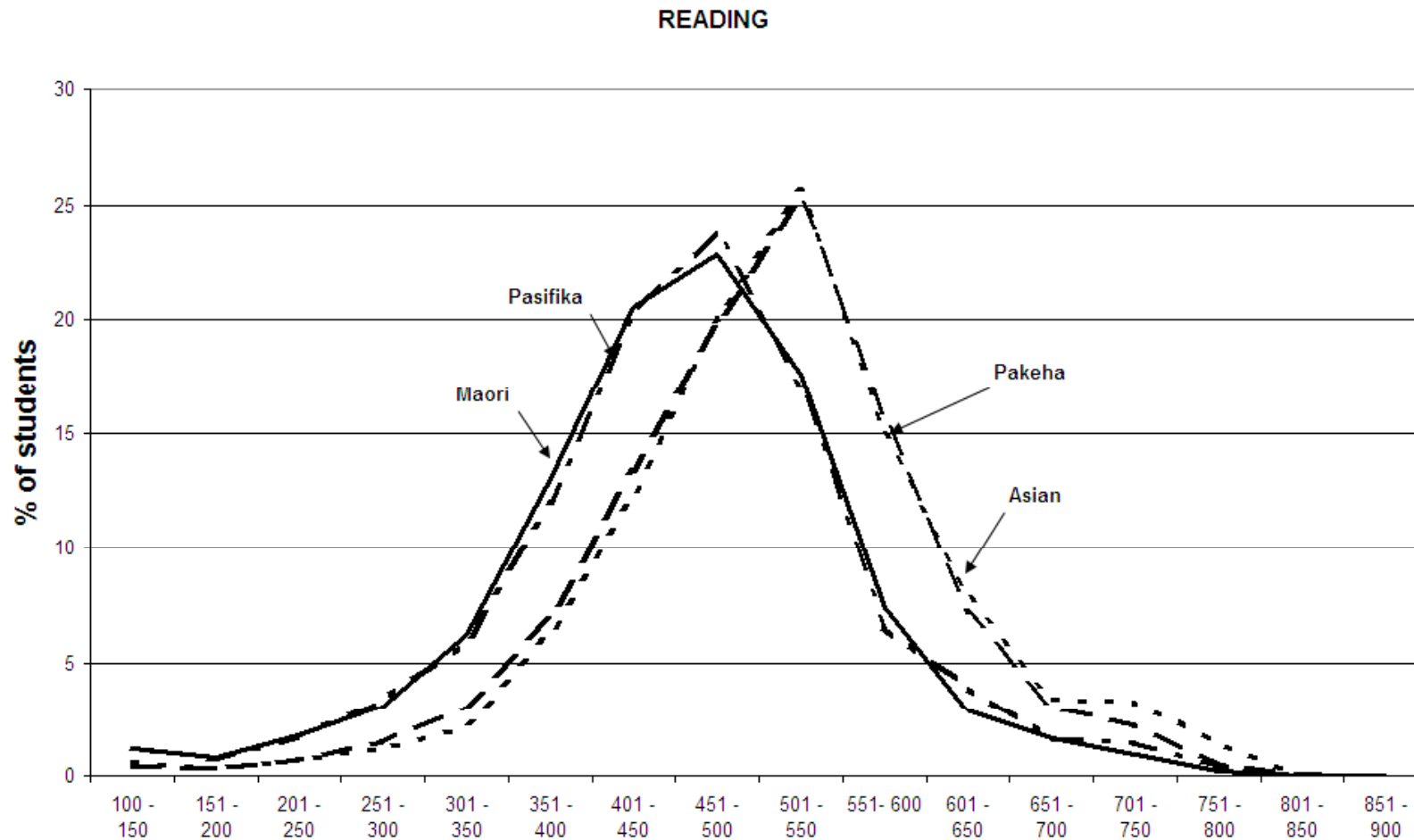
Constant Enrolment rates – assumes rates frozen at 2000 level

Constant Absolute rates – the no of students frozen at 2000 level

Narrow those gaps



But the gap is not there ...



Tomorrows' Schools: Yesterday's News

The quest for a new metaphor

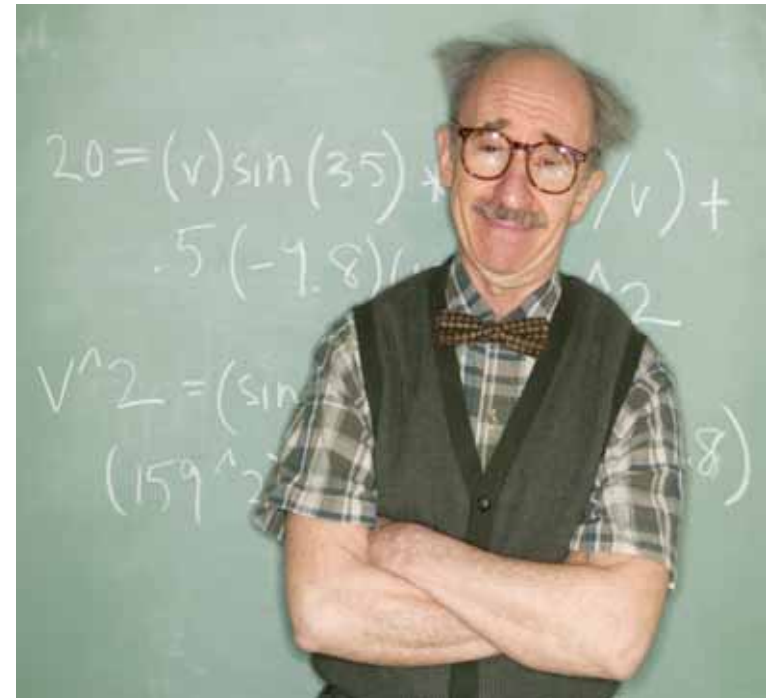
1. *Adequacy more than Equity.*
2. *There is no agency responsible for improvement.*
3. *Schools need to become the unit of evaluation.*
4. *The need for more independent evaluation of initiatives.*
5. *Tomorrow's Schools is having a negative effect on the career path of teachers.*
6. *By empowering 2800 schools to be mini-markets, there is much wastage.*
7. *Schools need to stop competing with each other.*
8. *The effects on student learning have been minimal.*

A Royal Commission, or some like process, is needed to devise a new metaphor that will

- allow different more regional/cluster models of schools to develop,
- remove even further any disparities between schools and between ethnicity achievements,
- ensure all have adequate resources and teaching to attain appropriate outcomes,
- further reduce competition between schools and allow more sharing of improvements particularly before schools are deemed to be failing,
- allow schools to become the major units of evaluation,
- create an agency responsible for evaluations of various initiatives,
- dependably assess and esteem quality teaching and teachers,
- determine optimal career paths for teachers and school leaders,
- identify and reduce wastage, and
- measure success more in terms of teaching and learning effects as well as on equity of resources.

What some teachers/leaders do!

- Clear learning intentions
- Challenging success criteria
- Range of learning strategies
- Know when students are not progressing
- Providing feedback
- Visibly learns themselves



Such that students ...

- Understand learning intentions
- Are challenged by success criteria
- Develop a range of learning strategies
- Know when they are not progressing
- Seek feedback
- Visibly teach themselves



VISIBLE LEARNING: A SYNTHESIS OF OVER 800 META-ANALYSES IN EDUCATION

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